TRADOC Global Threat Overview

Dave Shaughnessy

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The Character of Military Operations is Changing

- Terrorism
- Guerrilla warfare
- Access to space
- Information warfare & tech
- Ballistic missiles (vice air forces)
- Night vision equipment
- Precision lethality
- Sanctuary taken in complex and urban terrain

- Weapons of mass destruction*
- Theater missile defense
- Mobile/mechanized reserves*
- Complex relationships forming of terrorists, criminals, failed and

*Two variables when employed have greatest short term i

The Threat

Monolithic Threats

- Large, armored standing force.
- Politically and economically capable of sustained operations.
- Potential of maintaining allies or client states.

Variables

- **Geography**
- **Weather**
- **Capabilities**
- **Strategies and Tactics**
- **Civil/Military**
- **Mission**
- **Time**

Asymmetric Threats

- Standing force varies in size and capability.
- Capable of responding with weapons of mass destruction or biological or chemical means.
- Politically flexible.
- Able to withstand information campaign.

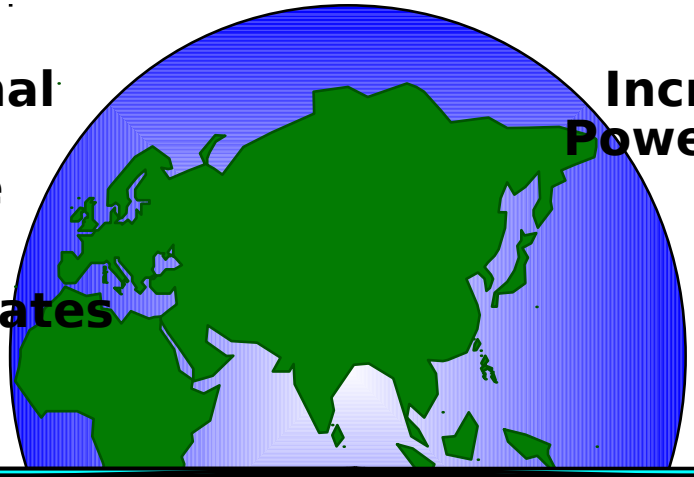
The US Army must continue to be organized, equipped, trained, and led to win against a threat that is capable of sustained combined military operations.

What Sort of World?

Nation States Continue

Transnational Threats Pervasive

More Failed States



Increased Major Power Competition

No Global Rival to the US

ECONOMICS

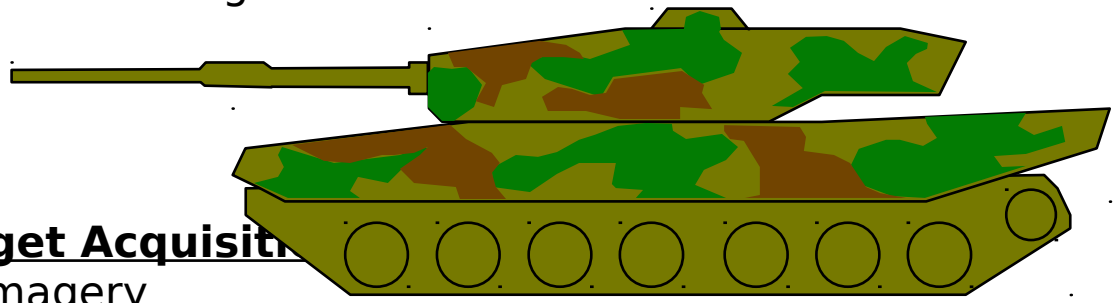
DEMOGRAPHICS

TECHNOLOGY

Weapons Technology Trends: Armor

Lethality:
- Main gun > 125mm
- Tube launched ATGM
  - LBR
  - Fire & forget

C3I
- Automated FDC
- Digitized data / Battlefield Management System



Target Acquisition
- Imagery intensification
- All weather
- Laser range finding
- Auto-tracking

Protection
- Laser / IR warning
- Active protective systems (FTG, IRCM)
- Passive systems (Camouflage, nets, LO materials)
- Obscurants

Production
- Low Rate Production for New Systems
- Retrofit of older models

Most Common

72 M1 (RS, CZ)
T-62 (RS, NK)
T-55 (RS)
Type 59 (CH)

State of the Art

T-80U (RS)
Leopard 2 (Improved) (GE)
Leclerc (FR)

Weapons Technology Trends: ATGM

Most Common
AT-3 Sagger (RS)
AT-5 Spandrel
MILAN (FR)
HOT (FR)
TOW (US)

State of the Art
AT-5B (RS)
AT-6 Spiral (RS)
HOT-2T FR)
RBS-56/BILL (SW)

Widespread Proliferation
- Cost effective

Attack Mode
- Top attack
- Direct attack w/ proximity fuze

Guidance
- SACLOS
- IIR Homing
- NLOS
- LSAH
- Fire & Forget

Warheads
- Tandem
- Improved Armor Penetration

Extended Range
- > 10,000m

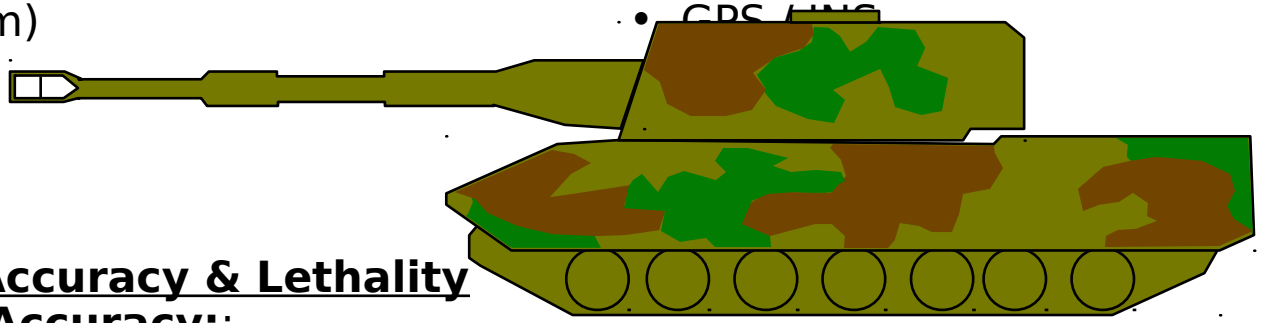
Weapons Technology Trends: Fire Support

Increased Range

Cannon: 40 - 50 km
- 45-52 Caliber length tube
- Propellant - LPG

MRL: 50 - 60 km (max 150 km)

Decreased Engagement Time
- (Near) Real Time Targeting
  - RPV
  - IR, EO/MMW, FPA
- Data Transfer
- GPS/INS



Accuracy & Lethality

Accuracy::
- Smart Munitions: small search area (hit probability >.5)

Lethality:
- Rate of Fire: 8 - 12 PRM
- Autoloader, automated FDC

Most Common
- M1943 120mm Mortar (RS)
- D-30 122mm How (RS)
- 2S3M 152mm SP How (RS)

State of the Art
- BM-21 122mm MRL (RS)
- 2S3 120mm Gun/Mortar (RS)
- GHN-45 155mm G/H - Towed(AU)
- G-6 155mm Wheeled G/H (SF)
- AU-F1 155mm SP How (FR)
- 2S19 152mm SP How (RS)
- ASTROS II 300mm MRL (BR)

Supportability
- Pallatized Ammunition
- Combustible cartridge
- 152 155 mm systems conversion

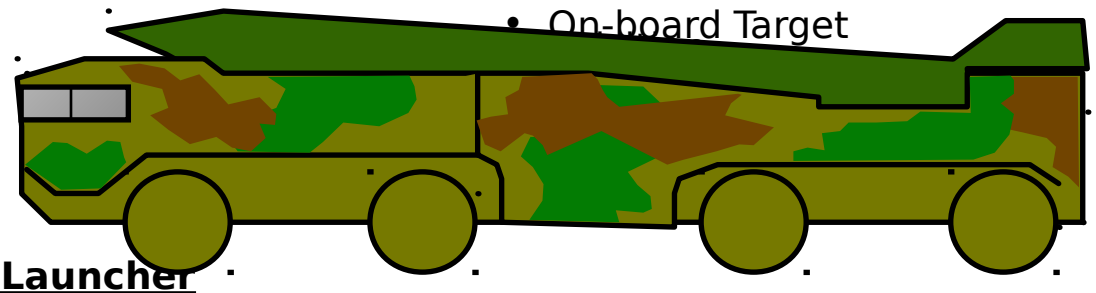
Weapons Technology Trends: SRBM

Guidance & Control:
- Active Attitude Control System
- Inertial Guidance w/Terminal Digital Correlation
- On-board Digital Flight Computer

Improved Warhead Options:
- Enhanced Blast
- NBC / Fuel Air Explosive
- Improved ICM
- Terminally Guided Homing
- Subminitions
- Anti-radiation Homing
- On-board Target

Most Common
FROG-7 (RS)
SCUD Variants
SCUD-B (RS
Al Hussein (
No-Dong (N
SS-21 (RS)

State of the Art
SS-21 (RS)
SCUD-B (RS)



Transporter Erector Launcher
- Survivability:
  - Low Observable Features
  - NBC protection
  - Lightweight armor
- Automated Fire Control
- SATCOM Digital Downlink: C3, GPS, TA, FD
- Shorter set-up time

Accuracy & Range:
- Range: Minimum 100 km
  Maximum 1000 km
- CEP: 10m at min range
  < 100m at max range

Propulsion

Solid Fuel

Staging

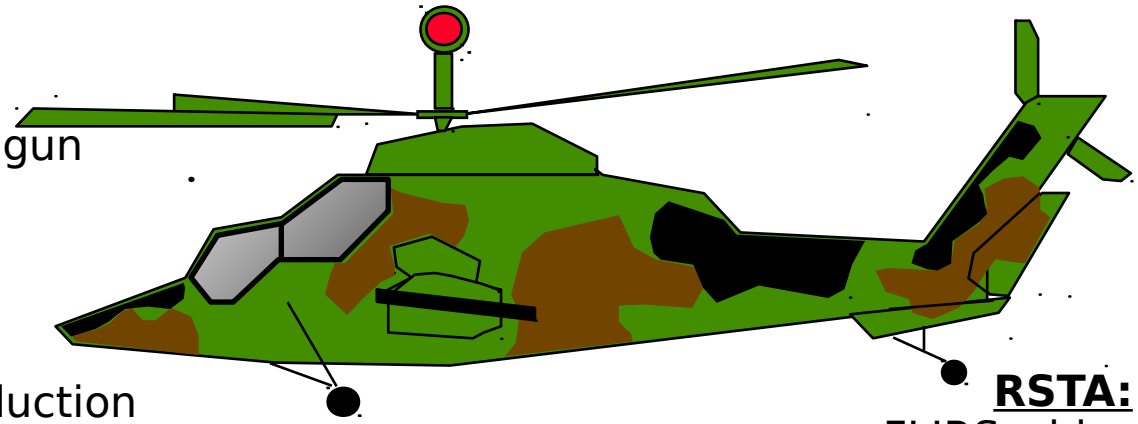
Multiple Stages

Weapons Technology Trends: Aviation

	UAVs	Helicopters	Fixed Wing
Most Common	DR-3 Drone (RS) MIRACH 100 RPV (IT)	SA-342 Gazelle (FR) MI-25 Hind (RS) BO-105 (GE)	MIG-21/F-7 Fishbed MIG-23 Flogger (RS) MIG-29 Fulcrum (RS) Mirage F-1 (FR) Su-27 Flanker (RS) MIG-31 Foxhound (RS) Mirage 2000 (FR)
State of the Art	Pchela-1 (Schmel-1(RS) Harpy (IS)	KA-50 Hokum "Werewolf" (RS) PAH-2 Tiger (FR, GE) A-129 Mongoose (IT)	

Battle Command
- GPS / INS
- Digital data transfer
- Integrated cockpit
- "Fly by Light" controls

Lethality
- ATGM - tandem warhead
- Medium caliber gun
- Auto tracking
- AAM



Survivability
- Signature reduction
  - IR plume suppression
  - RCS suppression
- Warning receivers

RSTA:
- FLIRS widespread
- Day/night capable
- EO/MMW sensors

Weapons Technology Trends: Air Defense

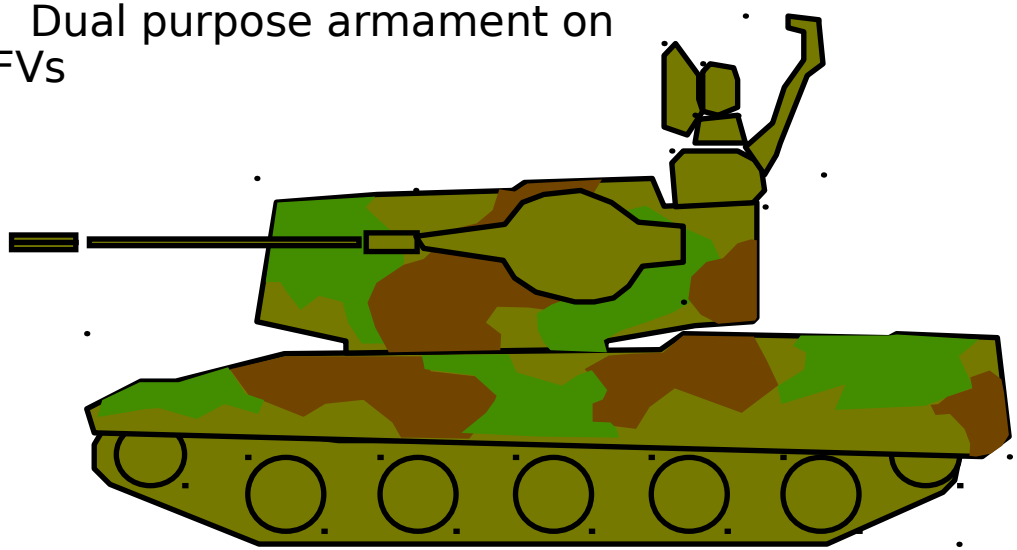
	Theater Strategic	Tactical	Manpad
Most Common	SA-2 Guideline SA-3 Goa –	SA-8 Gecko SA-13 Gopher ZSU 23-4 Crotale (FR) HAWK (US)_	Blowpipe (UK) SA-7 Grail SA-14 Gremlin SA-16 Gimlet
State of the Art	SA-10 Grumble SA-12 Gladiator	SA-15 Gauntlet 2S6 (RS) Crotale NG (FR)	Stinger SA-18

AAA

Munitions:

- Course correctable
- Programmable fuzes

- Improved sights
- All-weather/Day-night capability
- Dual purpose armament on IFVs

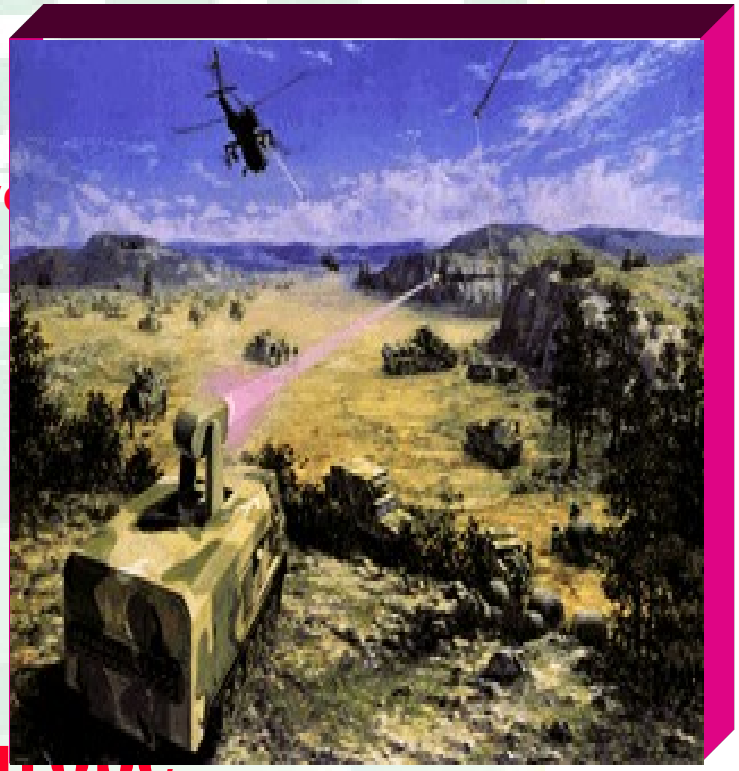


SAMs:

- Multiple, simultaneous engagement capability
- Range increased
- LBR guidance
- Multiple seekers
- Dual air-TBM capability

DEW

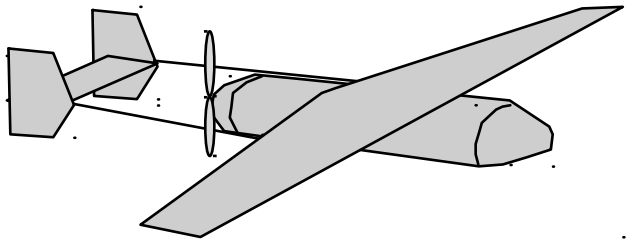
- Lasers
- High Power Microwave
- Radio Frequency Weapons
- Particle Beam Weapons



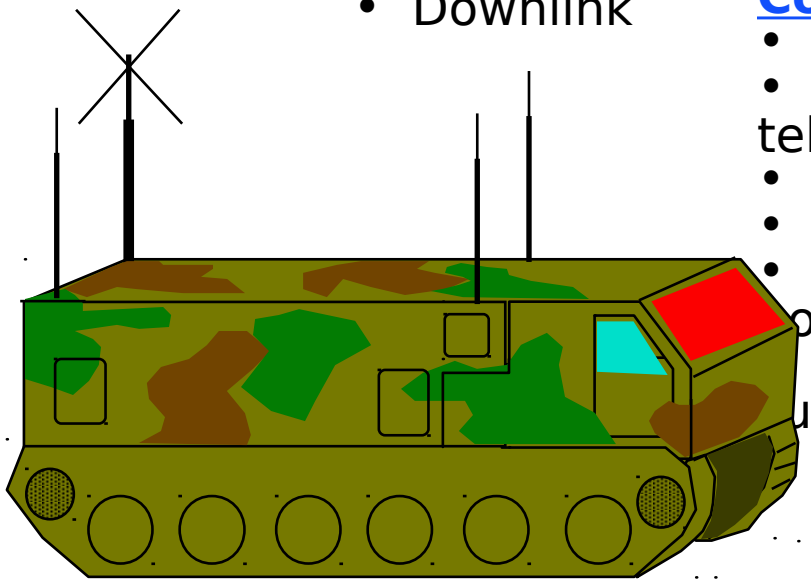
- Degrades US sensors
- Technologies are mature in China, Russia/FSU, and Europe
- "Tunable Systems" very difficult to countermeasure
- Proliferation worldwide

Weapons Technology Trends: C4 & RSTA

Tactical Targeting:
- FLIRS widespread
- Day/night capable
- Electronic scan
- Phased Array Radar
- Seismic
- MMW radar



Deep Targeting:
- Extended range (500-1000km) RPVs
- Multi-sensor suites
- Downlink



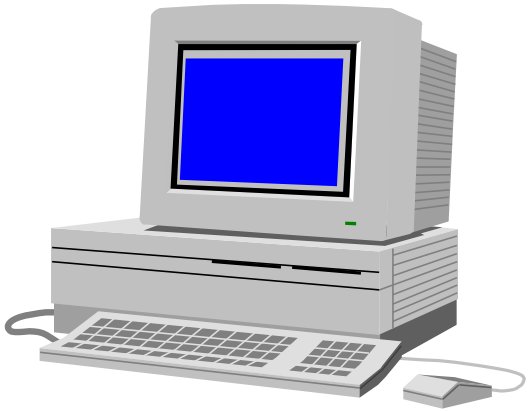
Communications:
- COMSAT
- Cellular telephones
- Fiber-optics
- Spread-spectrum
- Frequency opping
- Computerized upport -
  - encryption

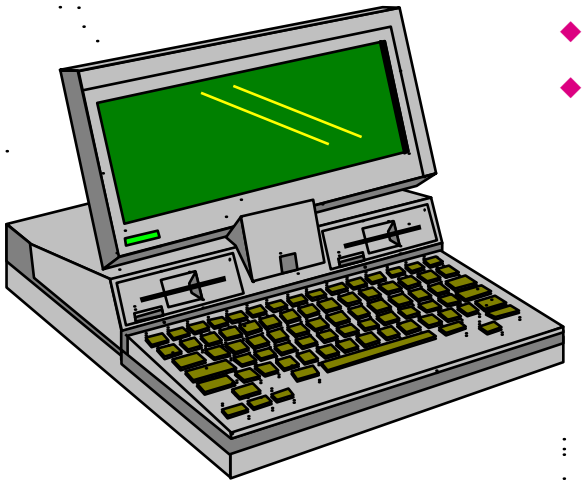
Satellites / Precision Navigation:
- GPS / INS
- Real time/near real time downlink -
  - Photo
  - Remote sensing
  - Data

High Tech Challenge: Computers

Dual-use technology

- **CAD/CAM**
- **Cryptological support**
- **Advanced research**
- **Enhance operations - battle control language**





Fluid field

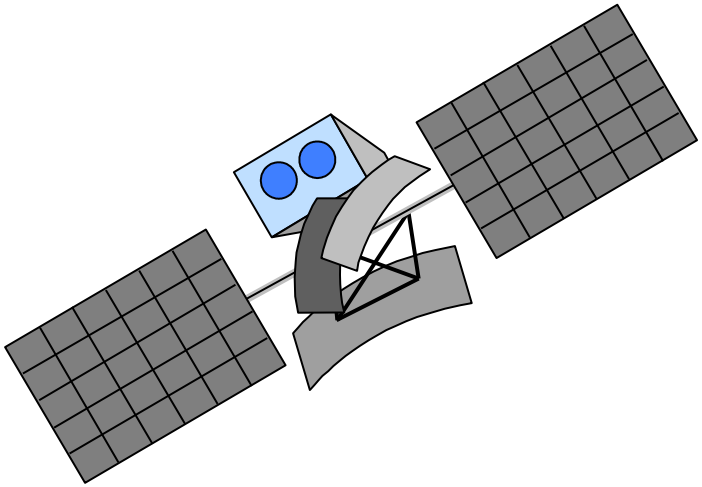
- 2-year life cycle
- Western / Japanese production

Computer warfare

- Information Security
- Viruses
- Sabotage
- Exploit computational predictability of oppnent's systems
- Disrupting networks

High Tech Challenge: Space

- **"Ultimate High Ground"**
  - **Recon (I & W / strategic / tactcal)**
  - **Remote Sensing**
  - **Navigation**
  - **Meteorological**
  - **Communications**

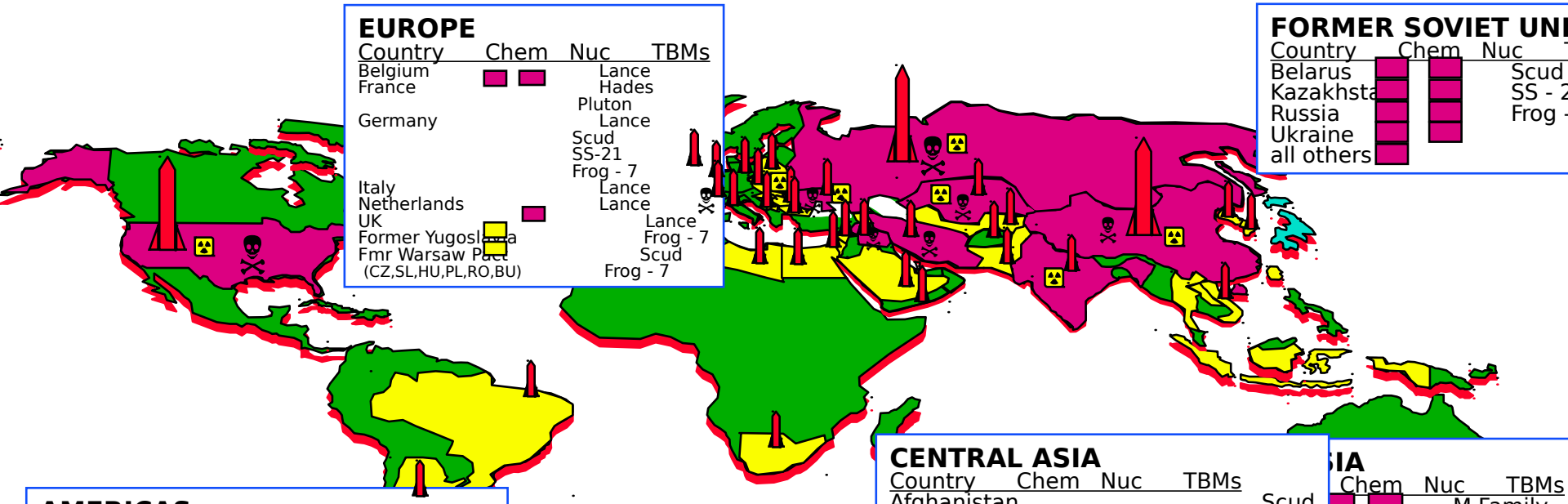


- Booster ⟷ SRBM/MRBM connection

- Countering space assets
  - ECM (downlinks)
  - DIfferential GPS
  - Satellite prediction tools / denial programs
  - Camouflage / deception
  - ASAT ?

Nations / consortia with military-capable space programs	Boosters	Recon	Comms	Nav	Met	Remote Sensing
CIS (RS/KH)	X	X	X	X	X	
France / ESA	X	X	X		X	X
China	X	X	X		X	X
Japan	X	X	X		X	X
India	X	X	X		X	X

TBMs & Weapons of Mass Destruction



EUROPE

Country	Chem	Nuc	TBMs
Belgium			Lance
France			Hades
			Pluton
Germany			Lance
			Scud
			SS-21
			Frog - 7
Italy			Lance
Netherlands			Lance
UK			Lance
Former Yugoslavia			Frog - 7
Fmr Warsaw Pact (CZ,SL,HU,PL,RO,BU)			Scud Frog - 7

FORMER SOVIET UNI

Country	Chem	Nuc	
Belarus			Scud
Kazakhsta			SS - 2
Russia			Frog -
Ukraine			
all others			

AMERICAS

Country	Chem	Nuc	TBMs
Argentin			A
Brazil			ME / EE
			SS-300 / 1

CENTRAL ASIA

Country	Chem	Nuc	TBMs
Afghanistan			Scud
India			Agni
			Prithvi
Pakistan			Hatf I / II

MIDDLE EAST

Country	Chem	Nuc	TBMs
Iran			Iran 130
			Scud
Iraq			Al Abbas
			Al Hussein
			Condor 2
			Scud
			Frog - 7
Israel			Lance
			Jericho I / II
Saudi Arabia			CSS - 2
Yemen			Scud
			SS - 21
			Frog - 7

CA

y	Chem	Nuc	TBMs
			Badr
			Condor 2
			Scud
			Frog - 7
			Al Fatah
			SS-21
			Scud
			Frog -7
Africa			Arniston

IA

Chem	Nuc	TBMs
		M Family
		CSS - 1/2/4
		Scud
		Frog - 7
		NHK - 1
		Green
		Sky Ho
		Scud
		SS-300

Theater Ballistic Missiles

Confirmed programs:

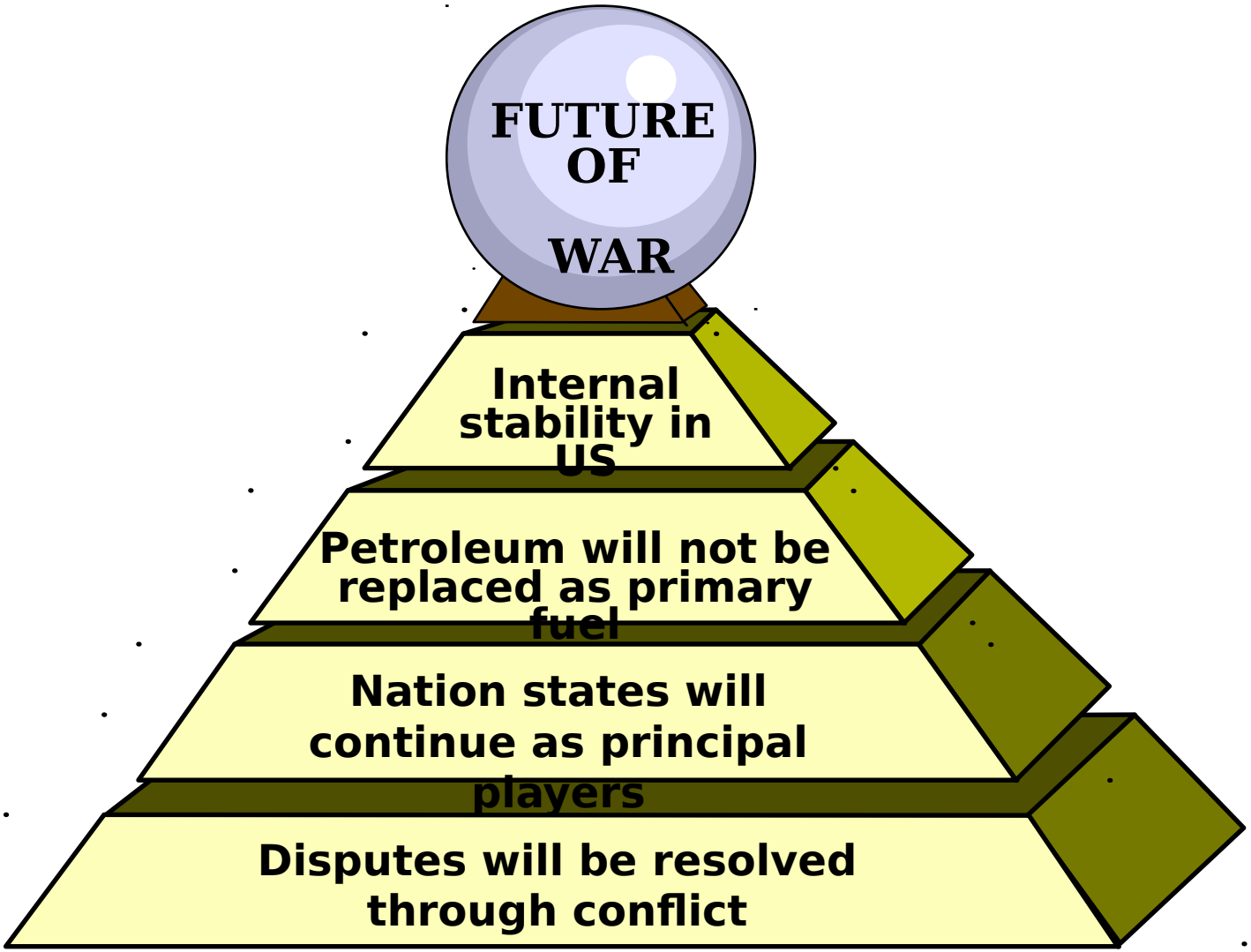
Chemical weapon program

Nuclear weapon program

Chemical or Nuclear program suspected or indevelopment

What Will Future Conflicts Be Like?

Assumptions



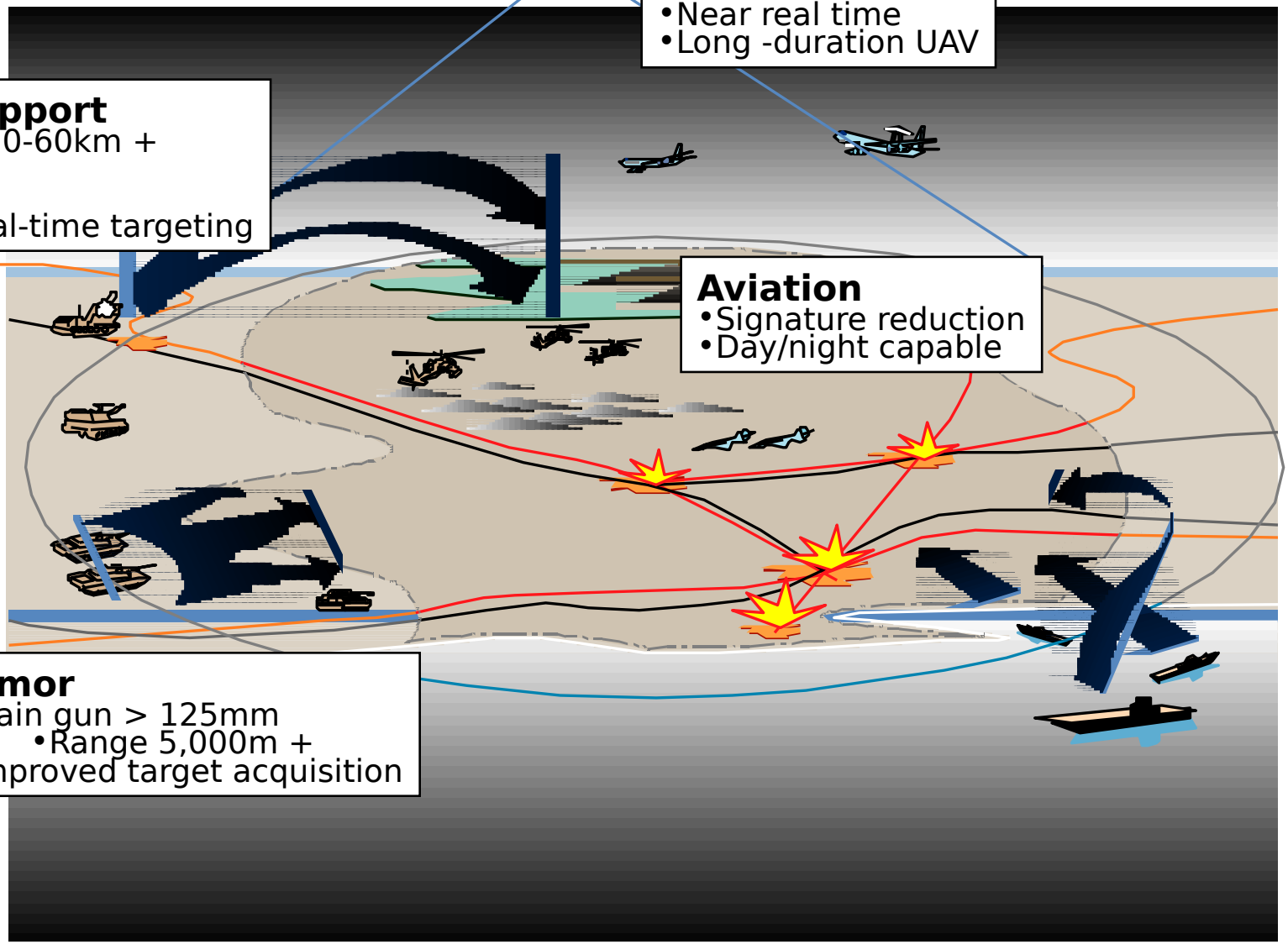
Modernization: Extending the Battlefield

Countering the U.S.

RSTA
- Near real time
- Long -duration UAV

Fire Support
- Range 50-60km +
- PGMs
- ADHPM
- Near real-time targeting

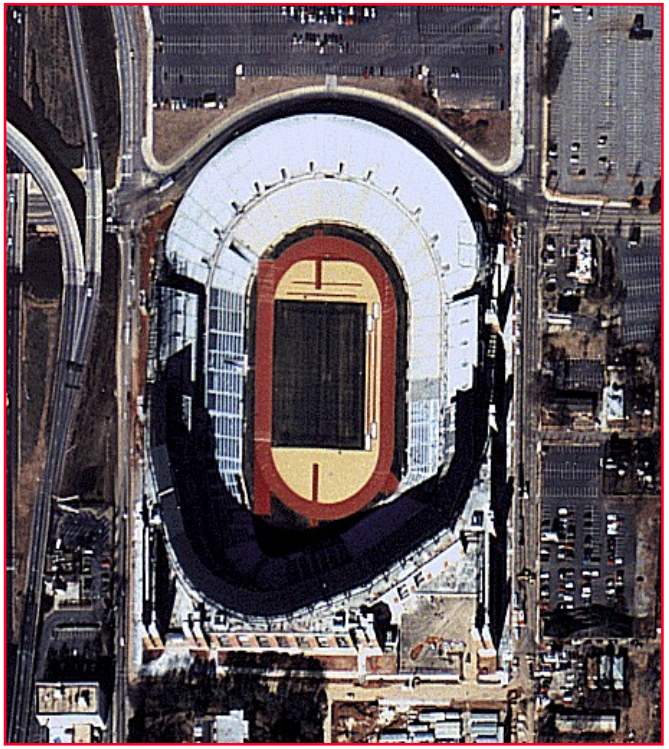
Aviation
- Signature reduction
- Day/night capable



Armor
- Main gun > 125mm
  - Range 5,000m +
- Improved target acquisition

Commercialization of Space

5 meter imagery of Atlanta, 1996

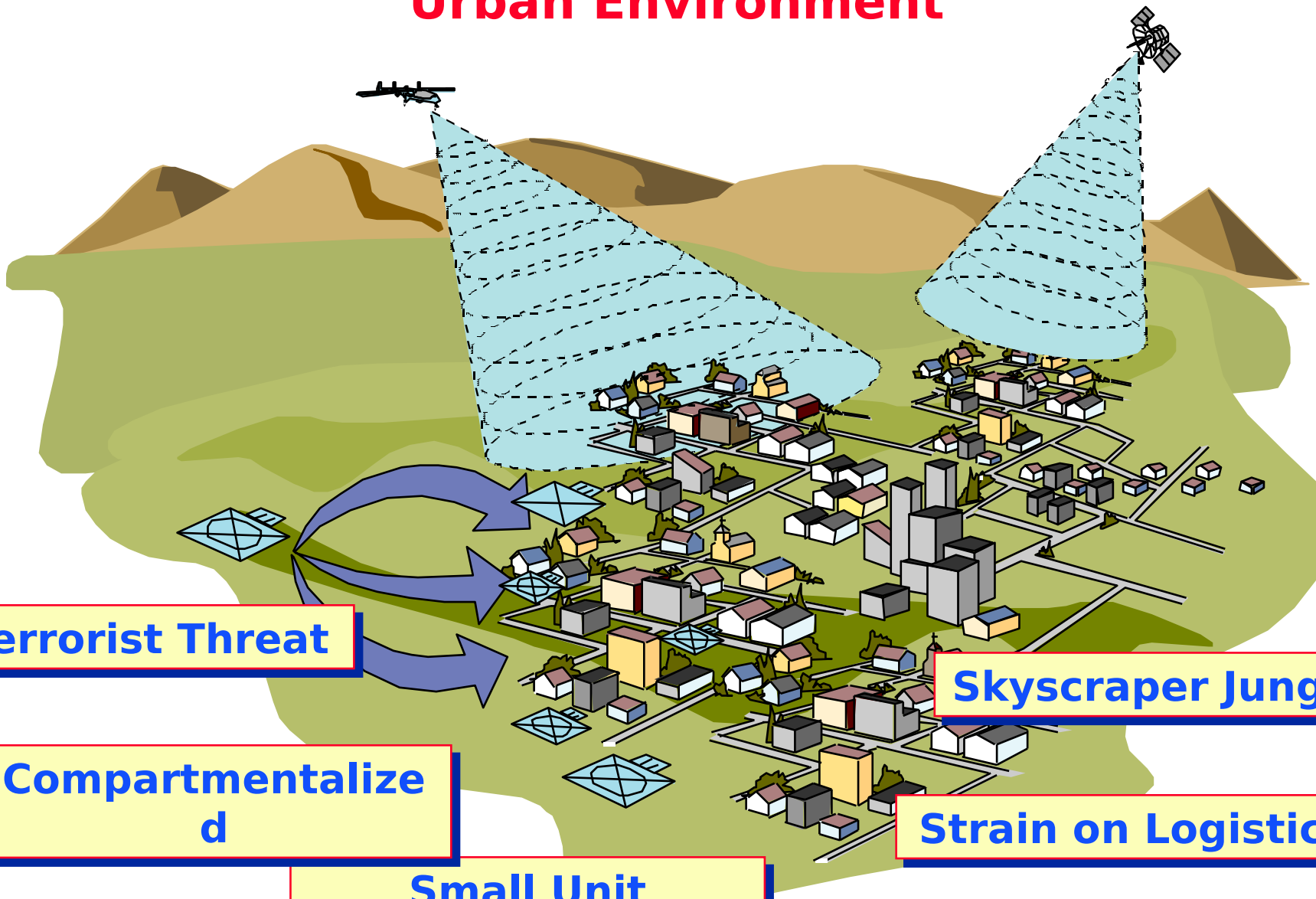


1meter imagery of Atlanta, 1996

- New space programs (foreign and commercial) will make space support globally available
- Commercial imagery will be taskable, targetable

Space will enhance effectiveness of anyone's weapons

Urban Environment



Terrorist Threat

Skyscraper Jungles

Compartmentalized

Strain on Logistics

Small Unit Operations

How will Adversaries Counter the US?

Space

Force Modernization

Employment of Asymmetric Warfare

Weapons of Mass Destruction

Information Operations

How can Forces Modernize?

Adversaries will field a Mixed Force

- Some Units can be VERY “modern”
- Some Modern Systems
  - Tanks
  - Helicopters
- More Hybrid Systems
  - Tanks - add on kits
  - Artillery - ADHPM

Hybrid Technology

Niche Areas

- C4I
- UAV
- Ballistic & Cruise Missiles
- Weapons of Mass Destruction

New Uses

INSCOM

TRADOC
DCSINT

Hybridization

The global trend is equipment upgrade...

T-72M2

PT-91

T-72

...Rather than the creation of entirely new models

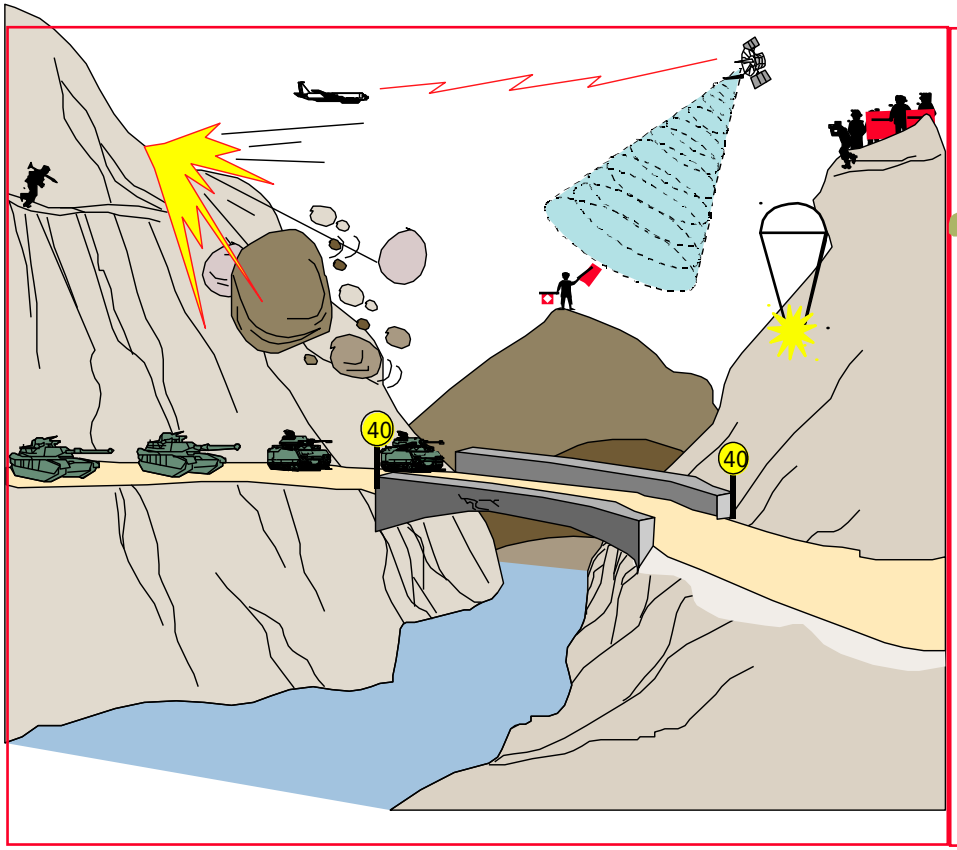
Asymmetric Warfare

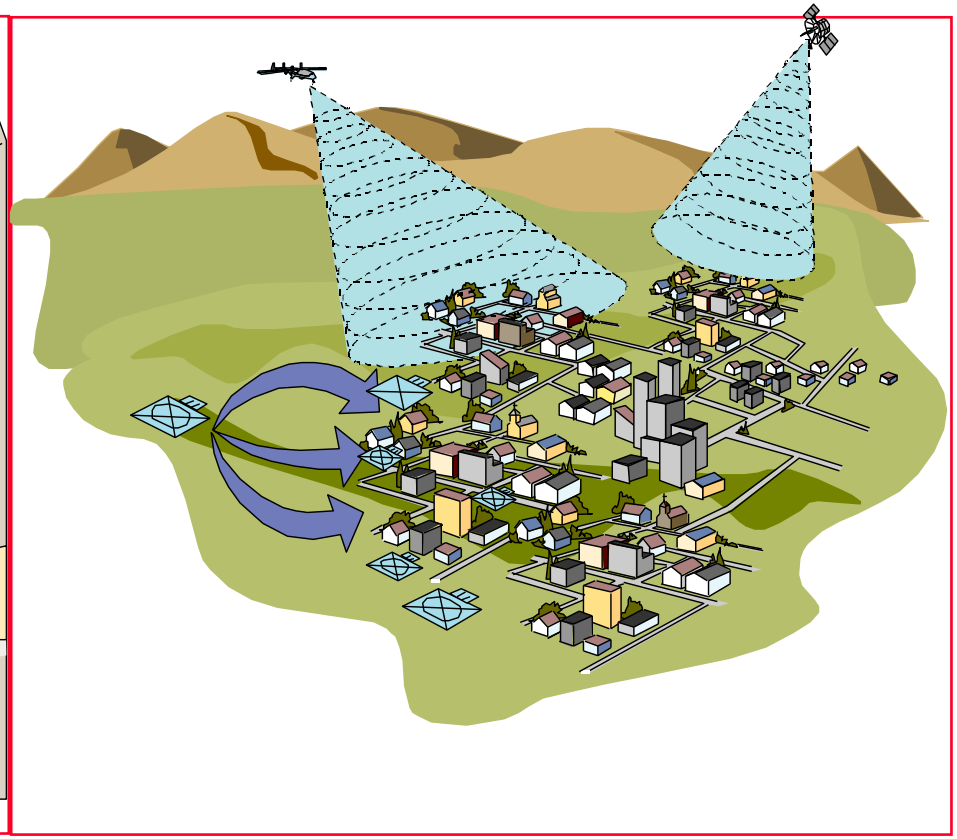
If you can't compete one on one --

-- change the rules

"No-tech beats high-tech every time"

Asymmetric Warfare at the Tactical Level





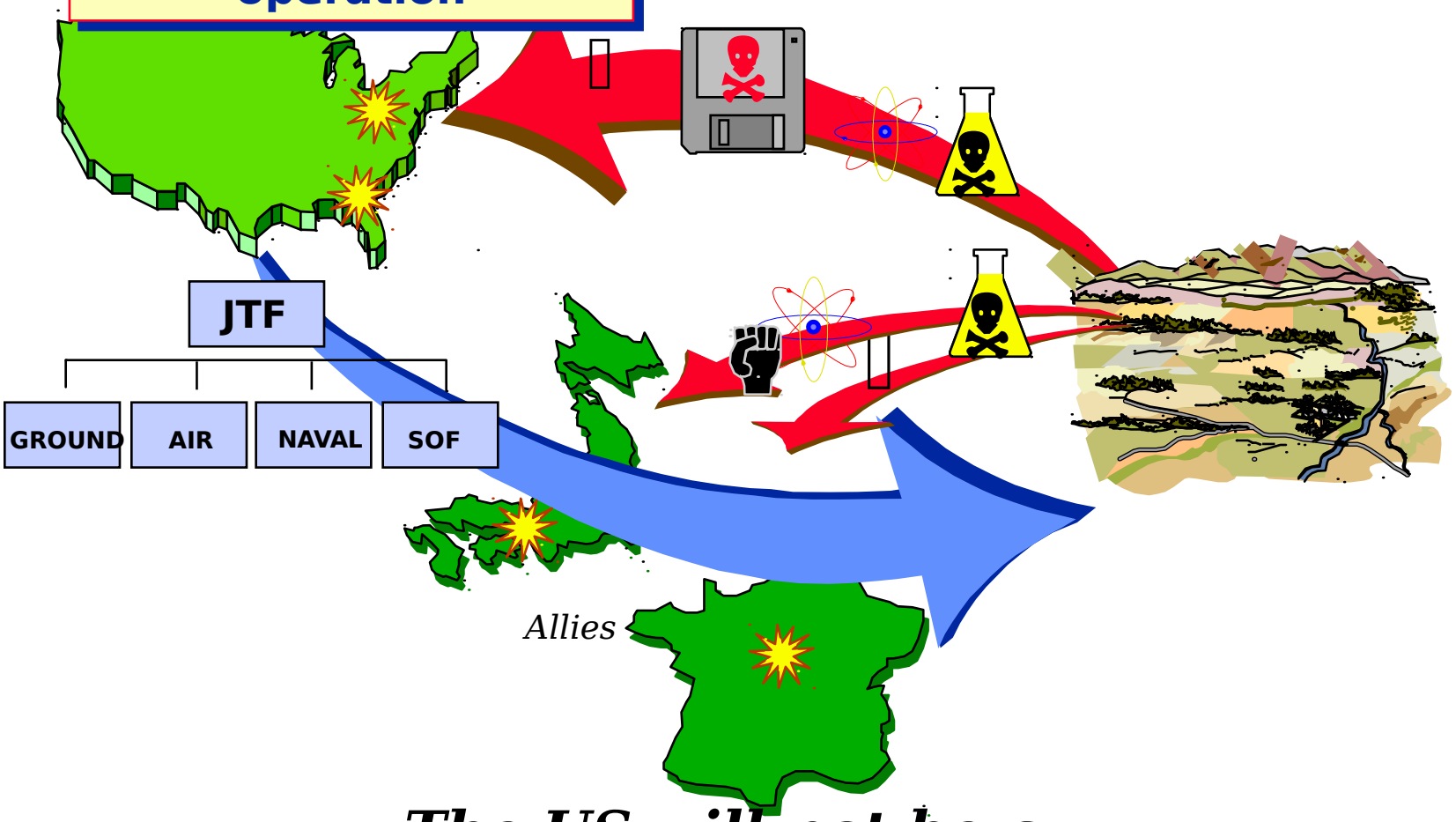
“No-tech beats high-tech every time”
MG David Baratto

- Counter precision warfare
- Negate technical advantages
- Attack vulnerabilities

Asymmetry- Strategic Level

US view:
Limited military operation

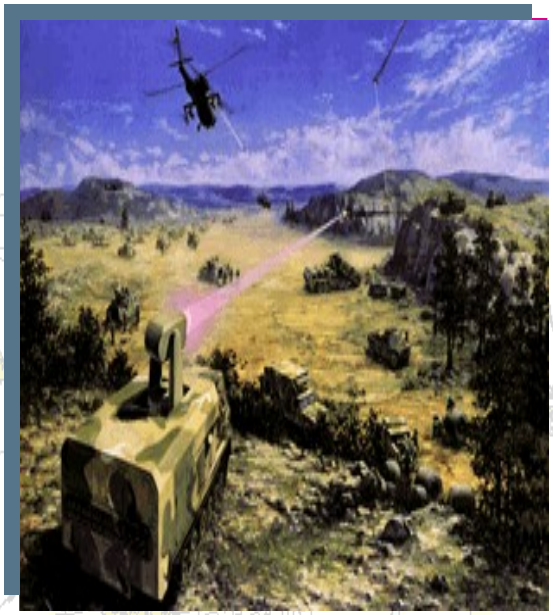
Asymmetric view:
Total war



The US will not be a sanctuary

Information Operations

Electronic Warfare
PSYOPS
Physical Destruction
Military Deception
OPSEC



- **Striking the Information Infrastructure**
  - Hacking as an instrument of war
  - Global targets
  - Low cost / low risk
- **Influencing policy and public opinion**
  - Manipulation of global news media

- **Striking the Tactical Force**
  - **Columns of tanks with microwave weapons**
  - **C2 interruptions delay deployments**
  - **Degraded logistics support without knowing why**

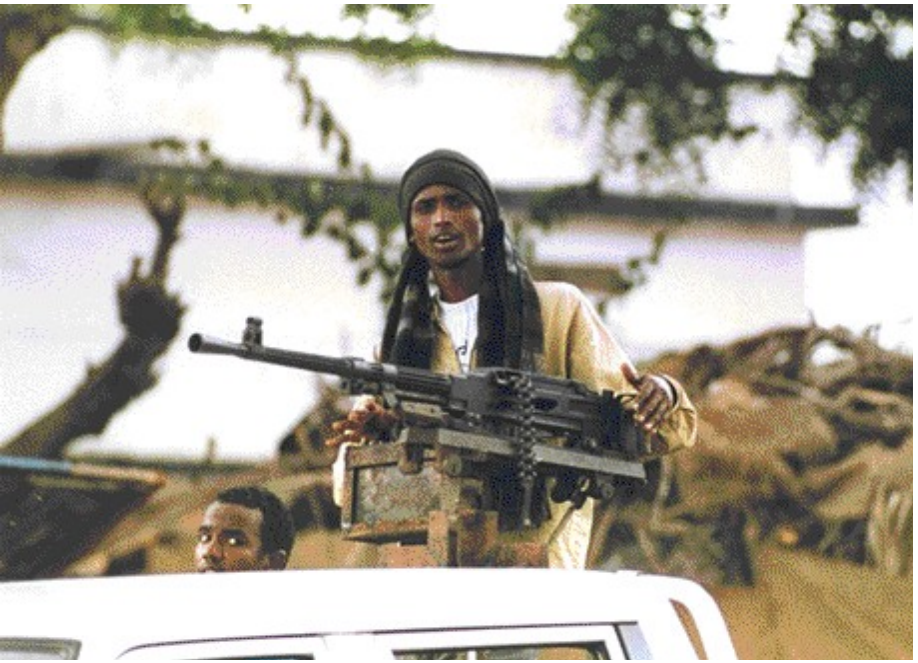
Asymmetric Warfare: Terrorism

- Way to strike at militarily superior foe
- Global reach
- Attacks against infrastructur logistics
- IW: attractive option
- WMD: growing threat

The Armed Islamic Group (GIA) is suspected of a truck bomb explosion that killed four persons and injured at least 80 in a suburb of Algiers on 2 September.

Wide World ©

A Pervasive Threat - Warriors (Non-State Entities)

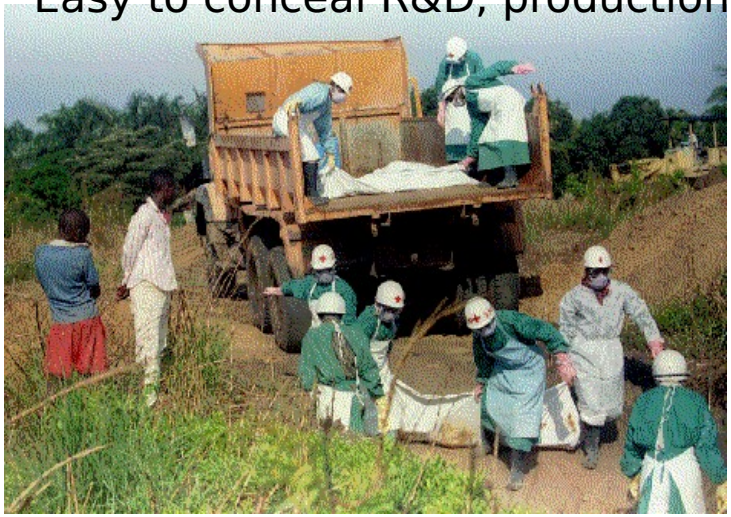


- Global threat -- concentrated in failed states
- Pose challenge for advanced militaries
  - Intelligence
  - Rules
  - Can have pockets of high technology

Weapons of Mass Destructio

Nuclear
- More players as technology comes into use

Biological & Chemical
- Terrorist weapon
- Cheap - dual-use technologies
- Biological most worrisome, but hard to control
- More agents
  - binary munitions and long range delivery
- Easy to conceal R&D, production

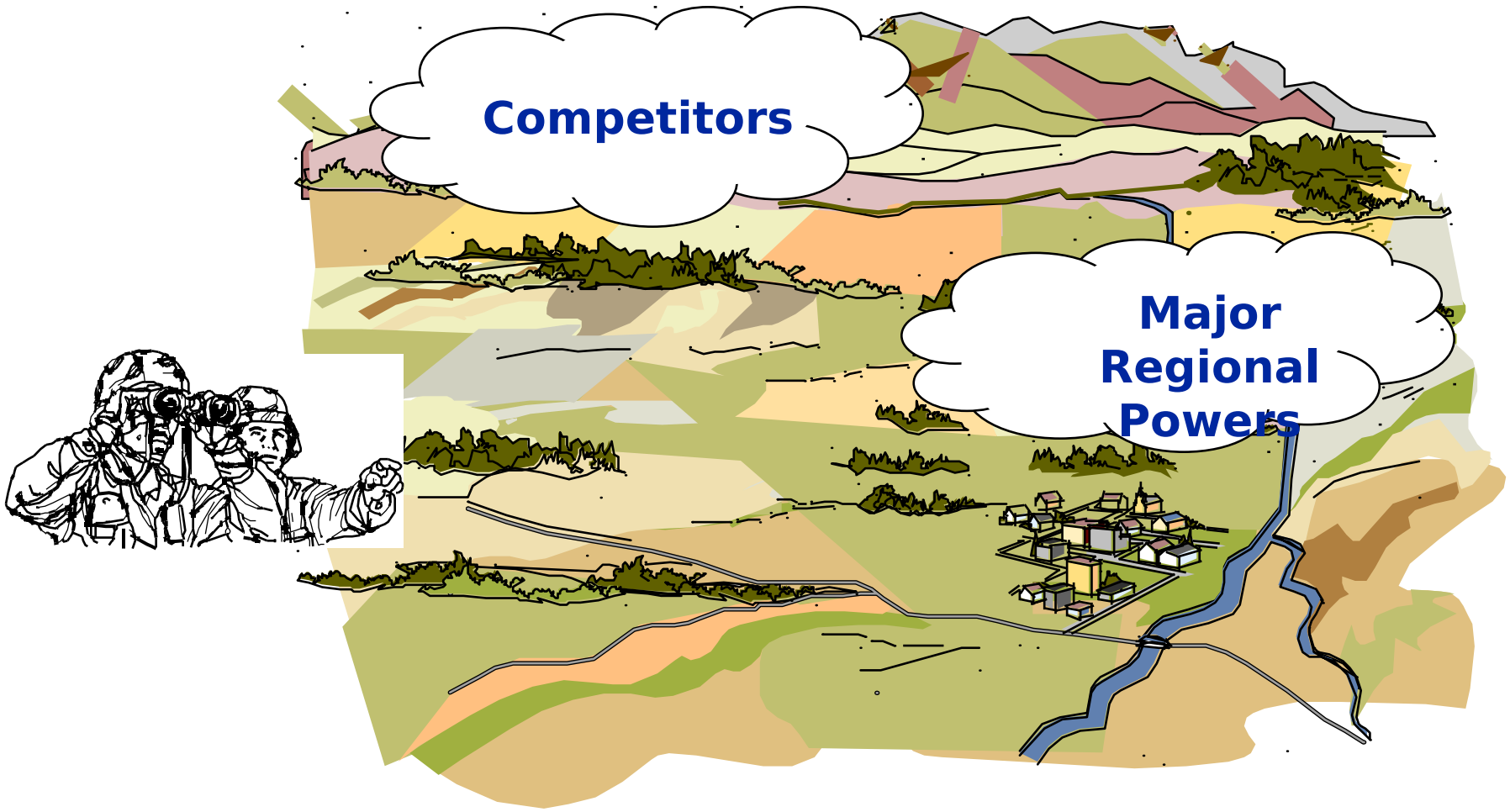


Red Cross workers bury Ebola victims in Zaire, 199

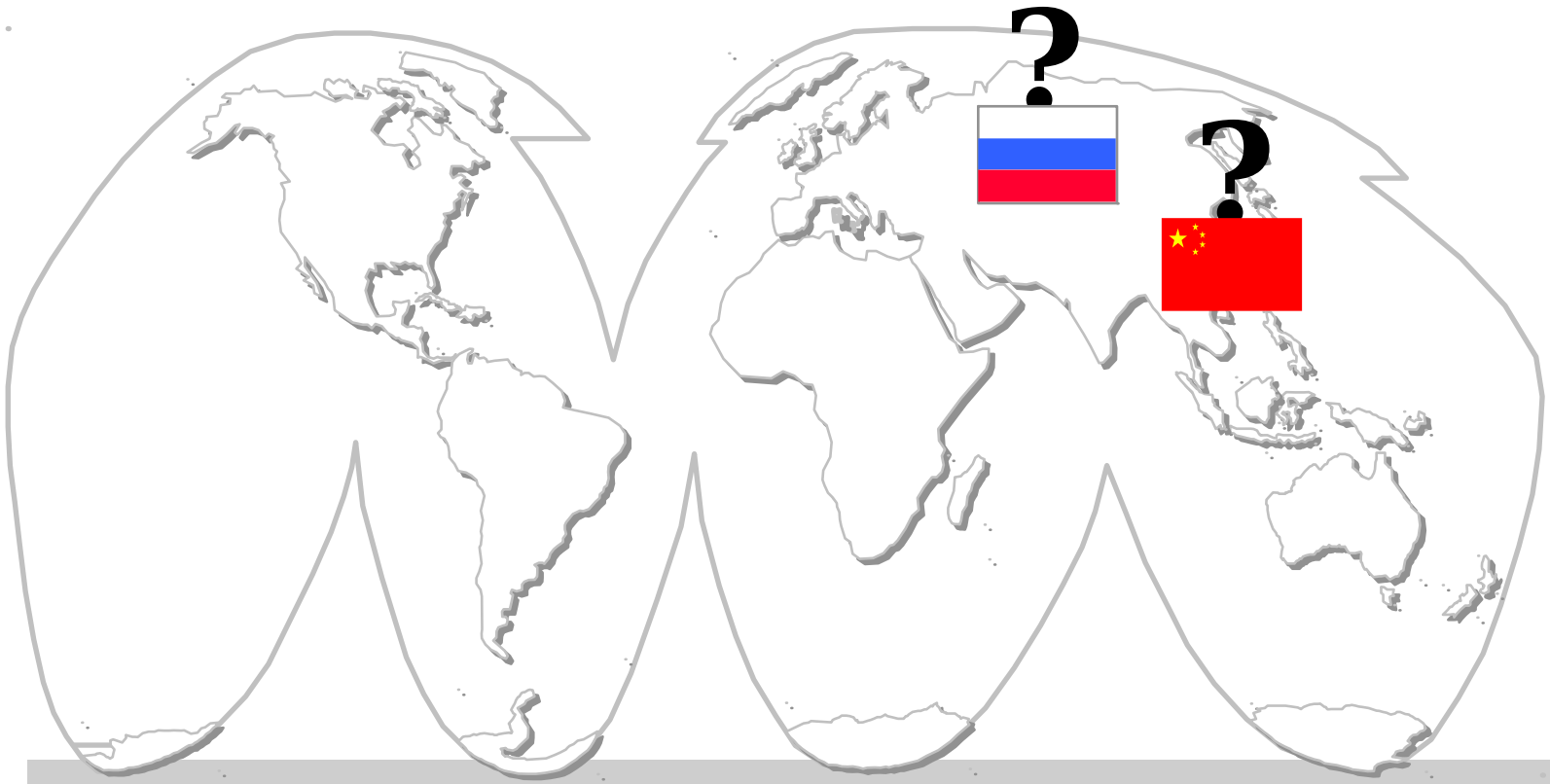
Japanese Self-Defense Forces prepare to clean up a Tokyo subway station after Aum Shinrikyo gas attack.

Wide World ©

Who will be on the Battlefield of the Future ?



Will the U.S. Face a Peer Competitor?



Motivation
Ideological
Economic
Religious

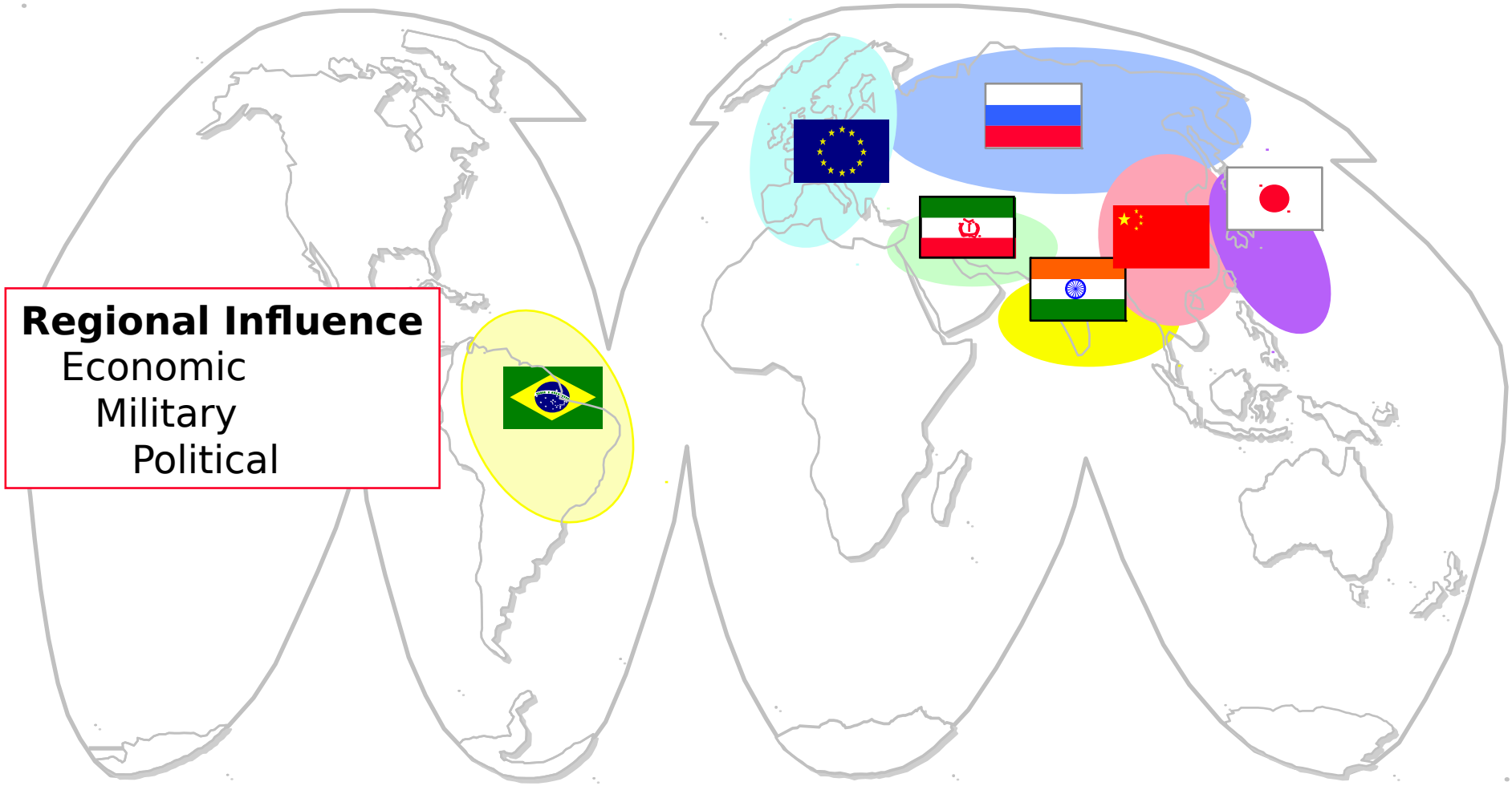
+

Capabilities
Land
Resources
Technology
Military Might

BOTTOM LINE: No Peer Competitor will emerge before 2015

Major Regional Powers

Countering the U.S.



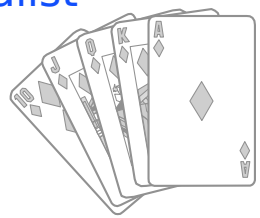
Regional Influence
Economic
Military
Political

- **Determine stability of their region**
- **Could defeat US within their home region**

Regional Conflicts: Russia & Neighbors

- Internal instability
  - Crime
  - Structural problems
- Relations with “near abroad”

Nationalist regime



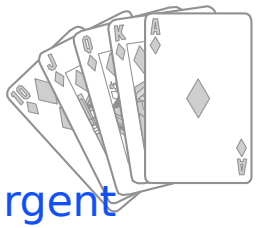
Inter-state Conflict	Resource	Hegemony	Ethnic/Religious
Ukraine - Russia		✘	✘
Caucasus	✘	✘	✘
Russia-Central Asia	✘	✘	✘

Potential failed states

Inter-state conflicts

Europe: Fewer Conflicts

- Interstate stability
- Transnational issues
  - Drugs & crime
  - Migration
  - Pollution



Resurgent Germany

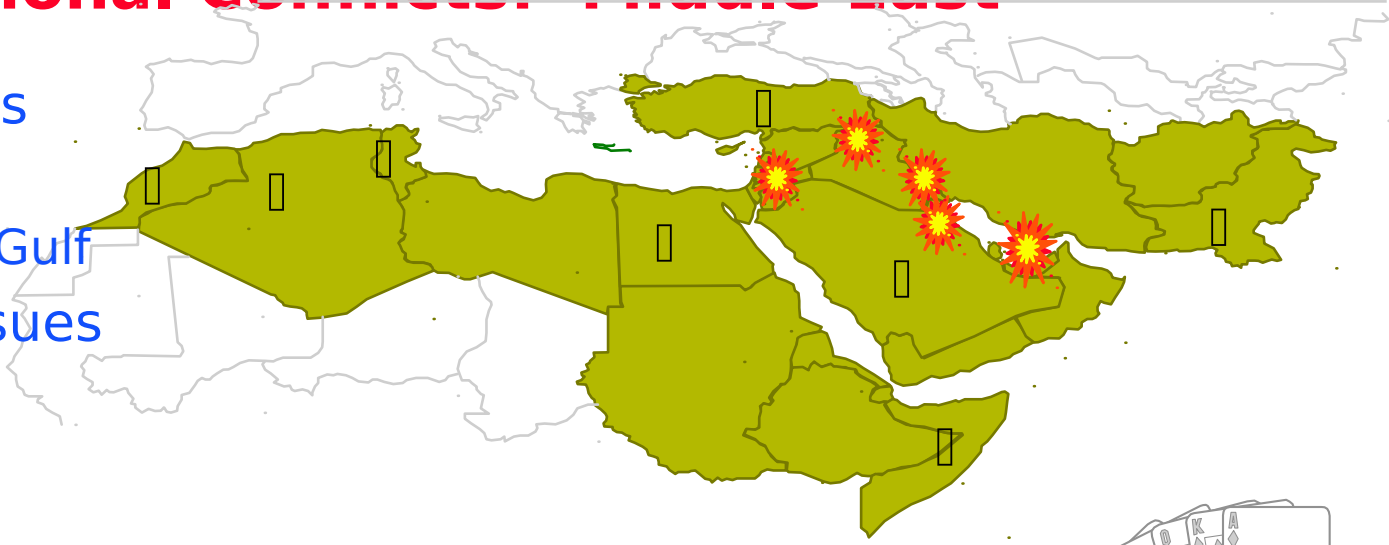
Inter-state Conflict	Resource	Hegemony	Ethnic/Religious
Balkans		✘	✘
Greece-Turkey	✘	✘	✘

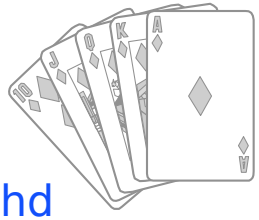
Potential failed states

Inter-state conflicts

Regional Conflicts: Middle East

- Ongoing conflicts
  - Arab - Israeli
  - Control of the Gulf
- Transnational issues
  - Youth bulge
  - Resources





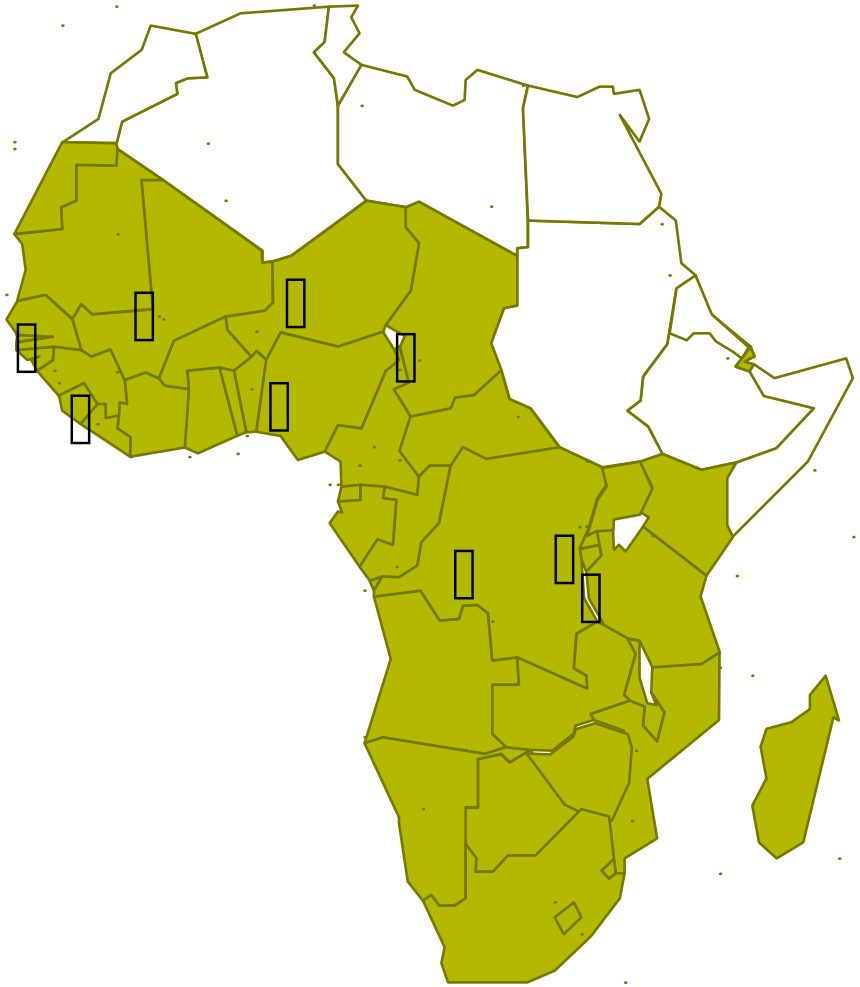
Post-Fahd
Saudi Arabia

Inter-state Conflict	Resource	Hegemony	Ethnic/Religious
Iran - GCC	✘	✘	✘
Iran - Iraq	✘	✘	✘
Iraq - GCC	✘	✘	
Iraq - Turkey	✘		
Israel - Syria	✘	✘	✘

Potential failed states

Inter-state conflicts

Regional Conflicts: Sub-Saharan Africa

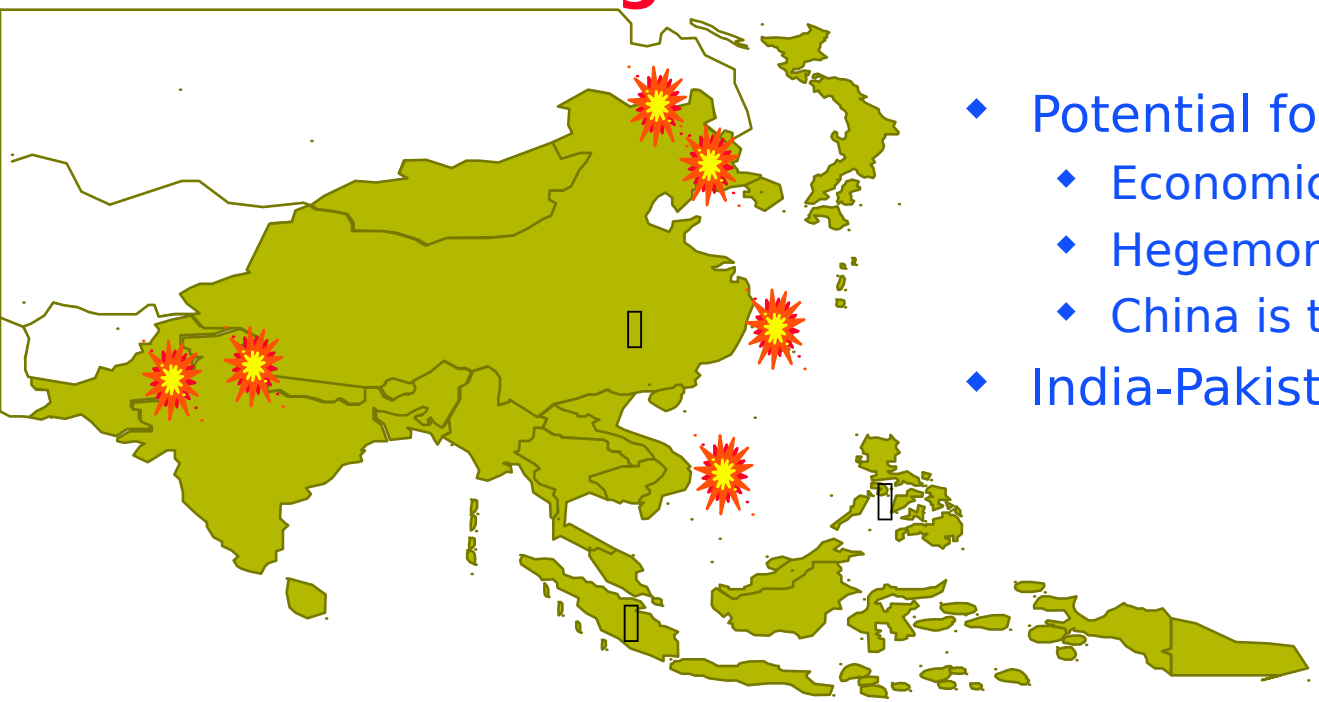


- Failed states
  - Unconstrained population growth
  - Severe resource competition
- Interstate conflicts
  - Central Africa
  - Border clashes
  - Insurgencies

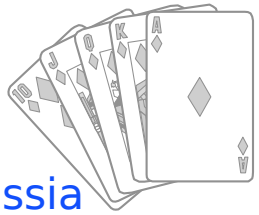
Potential failed states

Inter-state conflicts

Regional Conflicts: Asia



- Potential for conflict -
  - Economic
  - Hegemonic ambitions
  - China is the driver
- India-Pakistan: risk of nuclear war



Russia fragments

Inter-state Conflict	Resource	Hegemony	Ethnic/Religious
India - Pakistan		✘	✘
India - China		✘	✘
China - ASEAN	✘	✘	✘
China - Korea		✘	✘
China - Russia	✘	✘	

Potential failed states

Inter-state conflicts

Regional Conflicts: Western Hemisphere

- Transnational issues pose greater risks
  - Narco-trafficking & crime
  - Terrorism
  - Mass illegal migration
- Few interstate conflicts
  - Local
  - Short duration

Inter-state Conflict	Resource	Hegemon
Peru - Ecuador	✘	✘
Argentina - UK		✘

Potential failed states

Inter-state conflicts

The Bottom Line